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Door Release Power Supply

Engineer / Installation Manual

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Ventcroft Ltd
Door Release Power Supply Engineer / Installation Manual

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Engineer / Installation Manual

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1.0 Description

Ventcroft's range of door retainer power supplies offers two models. The premium model is a feature rich, simple to install and operate door retainer power supply with key-switch operation. The Standard model offers fewer features but retains the simplicity of use and ease of instillation. The Fire trigger input requires 16-30V @ only 0.5mA to release the doors. The Manual Trigger input requires any resistance of less then 47KΩ to be applied across its contacts to release the doors, this makes it ideal for use with call points and any other equipment with voltage free contacts. There is no need for any external fire panel monitoring to be used as the PSU actively monitors the Fire trigger input to check if Fire Panel is still present (selectable). The Power supply is controlled by a microprocessor which provides excellent stability and allows the PSU to be used with a wide range of devices. The PSU also contains an external watchdog, in the unlikely event of a microprocessor fault or failure the external watchdog will automatically signal a fault and close all doors.

2.1 Features – Standard (VPS-24TRA300S)

- Simple Instillation and Maintenance.
- 24V Output (unregulated).
- Built in Heavy Duty Relay.
- Capable of driving 10 x 24V 30mA Door Retainers, total of 300mA
- Microprocessor Controlled.
- Complete with Surface Mounting Double Gang Back box.
- External Watchdog.
- 24V O/P Fuse Monitoring.
- 3 Front Mounted Status LED's (Power, Fault & Release).
- Over-Load Protection.
- Fault Enable/Disable Option.
- System Integrity Fire Panel Monitoring.
- Manual Release Terminal.

2.2 Features – Premium – (VPS-24TRA300P)

- Simple Instillation, Maintenance and Fault Diagnosis.
- 24V Output (unregulated).
- Built in Heavy Duty Relay.
- Capable of driving 10 x 24V 30mA Door Retainers.
- Microprocessor Controlled.
- Complete with Surface Mounting Double Gang Back box.
- External Watchdog
- 24V O/P Fuse Monitoring.
- 3 Front Mounted Status LED's (Power, Fault & Release).
- Over-Load Protection.
- Fault Enable/Disable Option.
- System Integrity Fire Panel Monitoring.
- Manual Release Terminal.
- On Board Buzzer.
- Class Change Enable/Disable Option.
- Fault Mute Option.
- Front Mounted - Release / Mute / Latch Key-switch.

3.0 Kit Contents

VDR-KIT, Door Retainer Kit Sold Complete With a mini Door Release Power Supply (VPS-24TRA300S) - Standard Model, 24 Vdc un-regulated supply, built in heavy duty relay triggerable with three methods, and three status LED's and a Surface mount 24Vdc Door Retainer (VDR-S24) ; 24 Vdc +/- 15%, 30 mA, 0.6W, 83x83x46, 20daN Holding Force,0-40 Deg C,IP54

Contents -
1 * Door Retainer Power Supply (VPS-24TRA300S)
1 * Surface Mount Door Retainer (VDR-S24)
1 * Deep Base Double Gang Surface Back Box.
1 * Engineer / Installation Manual
1 * User Manual
1 * Accessory Bag Containing: -
2 * keys (Premium models only)
1 * Spare 500 mA Fuse

Fig.1

4.0 Technical Description

This section provides brief technical information about the functionality and setup of the Door retainer power supply.

4.1 Terminal Descriptions - Door Release Power Supply (VPS-24TRA300S/P)

Mains	L N E	The **Mains** terminals are how the PSU receives its main power source. L terminal connects to the Live mains wire, N connects to the Neutral mains wire and E is used to connect to the mains earth wire. It is good practise to fit a Non switched fused spare, fitted with a 1A fuses between the PSU and the mains supply. Any wiring or termination to mains supply should be in accordance to IEE and, or regulations and carried out by a trained and qualified electrician.
Fire I/P	+ –	The Fire I/P Terminals are used to connect the PSU to the fire panel. These Terminals should be connected to a suitable O/P on the Fire Panel. When these terminals receive a voltage between 16V and 32V the PSU will close all the doors that are connected to it.
Manual Release	• •	The Manual Release Terminal can also be used to close the doors, This terminal is constantly monitored, to activate the release a resistance of less than 47kΩ should be applied across these terminals.
Key SW-SW	• •	The **Switch** terminals are used to connect the front mounted Key Switch (where available) and should not used to connect to any other device.
24V OUT	+ –	These Terminals Provide the 24V Unregulated Output. 300mA MAX
Relay	C NC NO	This Connection is Common. This Connection is Normally Closed. This Connection is Normally Open.

4.2 Jumper Settings

Standard Models are fitted with the Fault Enable Pins only.
Premium Models are fitted with two sets of selection pins these are:-

Selection		
Class Change	On	Class Change Enabled - 16 second delay
	Off	Class Change Disabled - No delay
Fault	On	Fault Monitoring Enabled – Fire I/P
	Off	Fault Monitoring Disabled – Fire I/P

All Models have overload protection and 24V O/P fuse monitoring. The Fault Enable option is used to select fault reporting for the FIRE I/P.

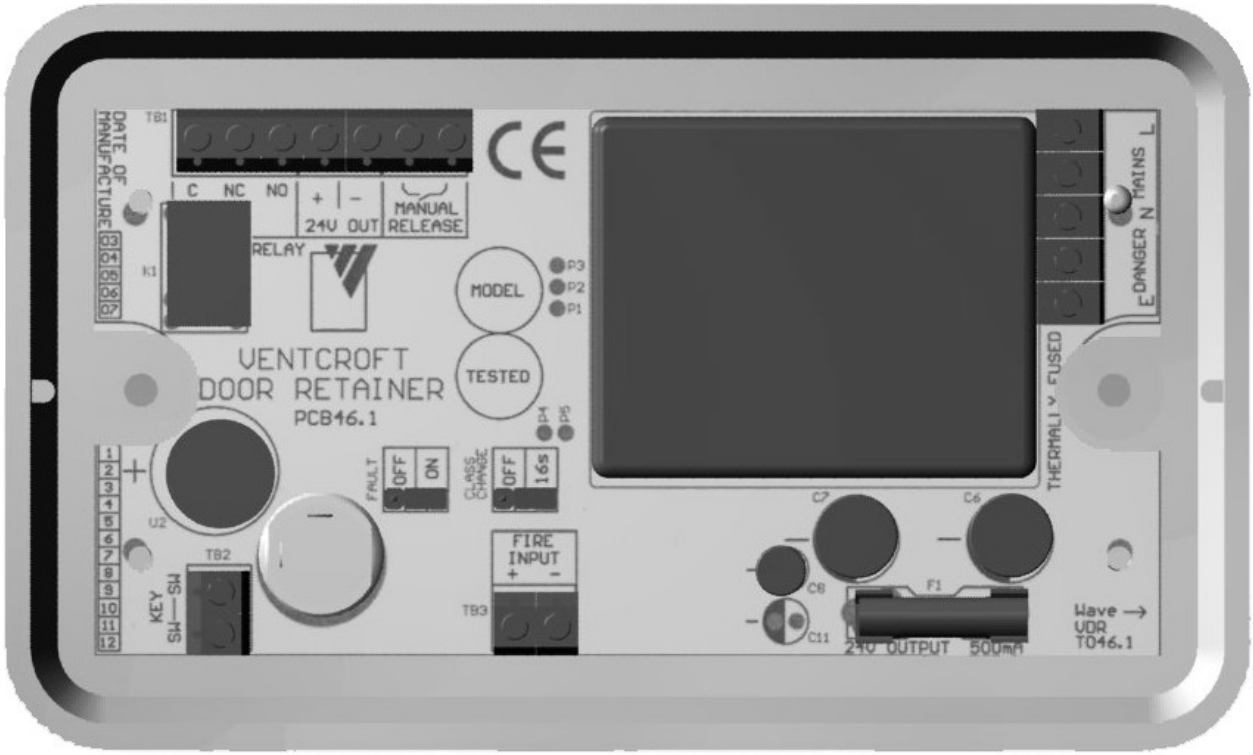

Fig.2

4.3 PSU Internal Safety Fuses

The PSU has 2 internal safety fuses to protect the sensitive electronics from external current overloads and short circuits, the internal transformer fuse is to conform to regulation and limit any risk of fire.

4.3.1 F1 – 24V Supply – 500mA, Anti Surge / Timed.

The 24V Supply Fuse protects the PSU circuitry, and any other device that are connected to it.

4.3.2 F2 – Mains Transformer Internal Fuse, 0.63A, 120 Deg (Non Replaceable).

The Mains Transformer Internal Fuse protects the PSU from overheating. The chance of this fuse blowing or breaking is very rare and highly unlikely and is circuit protection is mandatory and is non-replaceable.

4.3 Front Mounted LED Description

The PSU has 3 front mounted status LED's to provide user feed back. The LED's enable engineer and user to distinguish and recognise all status conditions of the PSU and system. A Green LED shows the state of the power supply, a Red LED displays the status of activations and an Amber LED shows any Fault conditions. The LED's can operate in a number of ways to show the PSU's status. The LED's can be constantly illuminated and they can also flash in a number of ways.

Fig.3

4.3.1 LED Display Types Quick Look Up Guide.

LED Display	Description
●	Constantly Illuminated
-☼-	Flashing Once Per Seconds on and Off. (1Hz)
·☼·	Slow Blink Once Every 5 Seconds (0.2 Hz)
··☼··	Increasing Flash, the Flash rate increases with time. (0.5Hz to 3Hz)
○	Not Illuminated Off.

4.3.2 Green LED – Power

The Green provides feedback of the state of the Mains power supply.

○	Not illuminated	No Power Present to the device
●	Constantly illuminated.	Power Supply ok
-☼-	Flashing once per second. 1Hz	Power Supply overload. Too much current being drawn from the device

4.3.3 Amber LED – Fault

The Amber Fault Led is indicates faults present on the system.

Action		Description
○	Not illuminated	No Fault
●	Constantly illuminated.	General Fault
-☼-	Flashing once per second. 1Hz	Fuse Blown or missing – 24V Supply not available

4.3.4 Red LED – Activation

The red activation LED provides the user with information about the type of activation.

Action		Description
○	Not illuminated	No Activation
-☼-	Flashing 1 Hz, Once per second	Manual Release Latched or Power Supply overload. Too much current being drawn from the device (all LED's Flashing)
··☼··	Increasing Flash	Class Change in progress – 16 Second Delay
●	Constantly Illuminated	Doors Being Released

4.4 Front Mounted Key-Switch (Premium models only)

The front mounted Key-Switch can be used for a variety of tasks. These Include:-

State		Action
	Quiescent	Activate system and release doors
	Fault	Mute
	Class Change	Override Class change and release doors.
	Latching	The Key-switch can be turned twice to enable the latch facility. See below.

Activate system and release doors

To Release the doors at any time insert the key and turn clockwise to the release / mute position, all LED's will illuminate and the buzzer (Premium models only) will sound for approx 2 seconds and the door(s) will be released. Turn the key back to its ACTIVE position. The door retainers are now active, if the doors are opened they will be held open. If you require the doors to be latched closed (remain closed indefinitely) see 4.4.1 Latching facility section below. Alternately the key can be turned to the release position and left in this position. This however is not recommended as the keys can be removed by unauthorised persons.

Mute

To mute a fault condition simply insert the key and turn the key clockwise to the release / mute position, the fault will still be displayed but will only generate a small beep every 10 seconds.

Class change

When class change is enabled the doors will not close immediately in the event of the sounders being activated, during this time the PSU will be pulsing the RED (release) LED and sounding the buzzer (Premium models only), this will happen for approx 15 seconds before the doors are closed, during this time the key can be turned to the release / mute position and override the class change and release the doors immediately.

4.4.1 Latching facility

The PSU has the ability to latch the doors closed. This means that the doors can remain closed indefinitely. This is done by turning the key from its active position to the release position, then back to its active position then to the release position and back to its active position. Simplified – turning the key twice. The key can now be removed and the doors will remain closed. To cancel this feature simply insert the key and turn to release and back to active again.

Fig.4

4.5 Internal Piezo Buzzer **(Premium models only)**

The Internal Piezo buzzer provides audible feed back to the users and engineers, and enhance the front mounted LED's.

Action		Description
	PSU in quiescent	No Sound
	Fault	Constant Tone
	Class Change	Short Pulse Tone, speed increasing with time
	Muted	Short Beep Every 15 Seconds.
	Activation	Constant Tone

5. Installation

This section will cover the Considerations, Planning, installation and testing process, from mounting, wiring to testing of the PSU.

5.1 General Installation Considerations.

When planning a Door Release Power Supply, the positioning of all components should be given careful consideration before mounting, for accessibly of the user, accessibility for cabling and the type of surface to be mounted too.

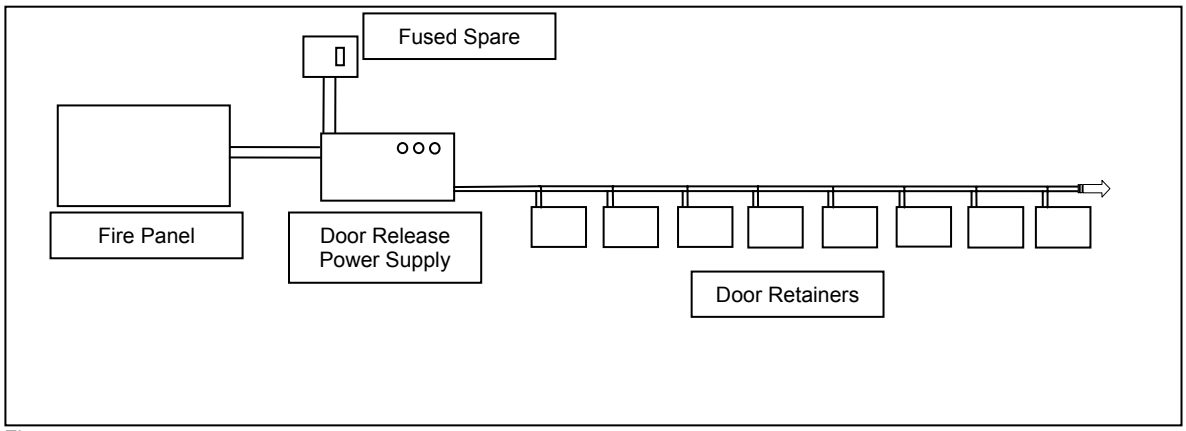

Fig.5

For wiring purposes as can be seen in fig.5 the PSU is wired between the Fire Panel and Door Retainers. Each Door Release Power Supply can power a maximum of 300mA approx 10 standard 24V Door Retainers. When mounting the PSU it should be ensured that there is sufficient space for cabling and the fused spare. The fused spare can be mounted in a separate location.

The PSU can supply a maximum of 300mA, on average each door retainer will provide a load of between 20mA and 30mA dependant on its type. If too many devices are connected to the PSU (i.e. the current exceeds 300mA), a fault will be displayed. This fault will be displayed as all LED's flashing and buzzer beeping (Premium models only). During this time the power to the devices will be removed. After 15seconds the power will be re-applied briefly if there are still too many devices attached then the system will remove power and wait another 15 seconds, this will continue until the current is reduced to 300mA or less.

5.3 Mounting and Fixing.

This section deals with the detail of mounting and connection the PSU.

5.3.1 PSU

(Double patress)

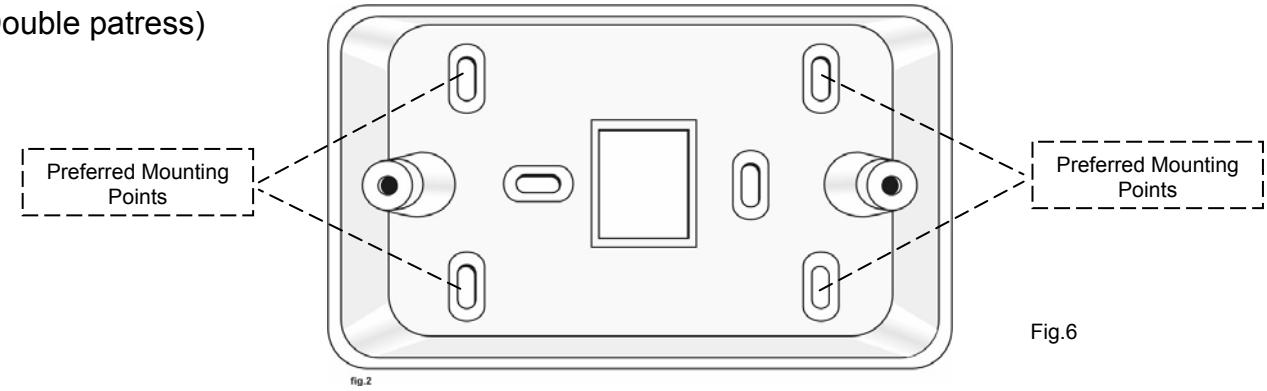

Fig.6

The PSU has been designed to fit a double patress and can be fitted flush or surface mount.
The PSU is supplied complete with a double patress.

5.4 Wiring and Termination.

This sections deals with the wiring and connection of the PSU to the mains supply and other external devices.

5.4.1 Relay Contacts

Before making any connections to the PSU make sure that it is isolated from the mains supply.

Connect the chain of door release power supplies to the relay contacts. The preferred method is shown below.

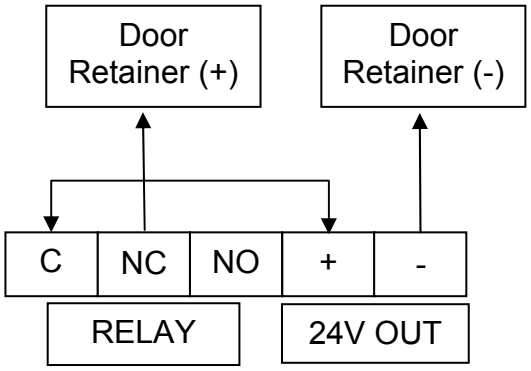

Fig.7

Door Retainers are chained together, positive to positive and negative to negative. Up to 10 x 30mA door retainers can be chained together using this PSU.

5.4.2 Mains Terminal

Connect the mains supply wires, observe the correct polarity. Live (Red) to “L”, Neutral (Black) to “N” and Earth to “E”. Note before making any connections ensure the mains supply is off/ / isolated.

5.4.3 Fire I/P

Connect the fire panel to the PSU. There are several methods of connecting the fire panel t the PSU, they are listed below.

Connecting the PSU to the sounder O/P.

The Sounder O/P of the Fire panel is connected to the Fire I/P of the PSU. Simply connect the Positive Terminal of the sounder O/P to the Positive terminal of the Fire I/P and the negative terminal of the sounder O/P to the negative terminal of the Fire I/P. Note : the PSU’s fault monitoring on the FIRE I/P Terminals may not be supported by all makes of fire panel, this feature can be disabled by moving the FAULT selection header to the OFF position.

Connecting the PSU to the Fire O/P

The Fire O/P of the Fire panel is connected to the Fire I/P of the PSU. Simply connect the Positive Terminal of the Fire O/P to the Positive terminal of the Fire I/P and the negative terminal of the Fire O/P to the negative terminal of the Fire I/P. Note : the PSU’s fault monitoring may not be supported by all makes of fire panel, this feature can be disabled by moving the FAULT selection header to the OFF position.

Connecting the PSU to a relay.

The Fire I/P is connected to a switched relay contact. The relay should be capable of switching 24V DC to the Fire I/P terminals.

5.4.4 Manual Release

The manual release terminals can be connected to almost any voltage free contacts such as call points or relays. The Manual release should be connected as shown below.

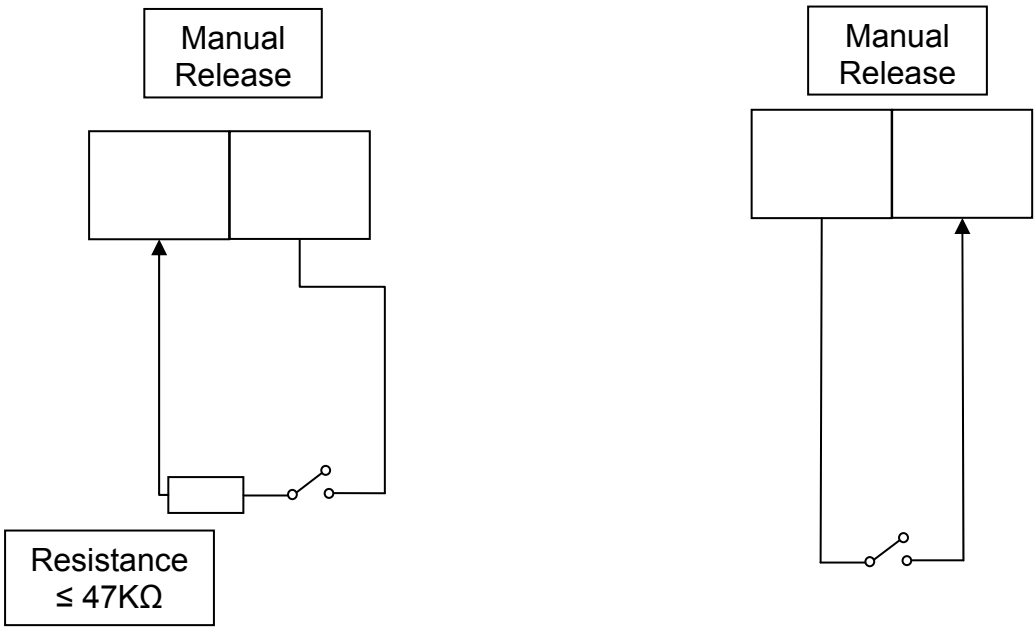

Fig.8

6.0 Commissioning

This section sets out to ensure that the Door Release PSU has been completely tested and the User is comfortable with is operation.

6.1 Powering Up

Once the system is fully installed, the door retainers wired correctly and the front cover fitted the mains supply can now be applied to the PSU.

The Front Mounted LED's will now flash in sequence RED, YELLOW then GREEN, the buzzer should sound with each LED (Premium models only). Once all the LED's have been illuminated the RED and YELLOW LED's should go off, leaving only the GREEN Power LED. The PSU is now in its quiescent mode and is awaiting a trigger signal on one of its inputs.

6.2 Testing

The Entire Door Retainer System should now be thoroughly tested.

Each Trigger input should be activated in turn and all doors connected to the PSU should close.

7.0 Operation and Functionality

This section sets out to detail the operation and functionality of the Door Release PSU and how to "Activate" and "Reset" the System.

7.1 Normal Quiescent. (ACTIVE)

Normal Quiescent mode is when the PSU is in standby and waiting to receive a valid trigger from the fire panel or any of its other terminals (if connected).

In "Normal Quiescent Mode" the PSU has mains power supplied and only the Green power LED is illuminated.

7.2 Release (RELEASE)

"Release" occurs when a valid signal has been received from one or more of the PSU's input terminals i.e. Fire Panel, Call Point, key-switch, or any other appropriate devices connected.

7.2.1 Fire Input Release

A fire input release occurs when the PSU receives a valid signal from the Fire panel at the FIRE INPUT terminals. The microprocessor will take several samples of the data before deciding if it is valid, once the decision is made to release the doors the microprocessor will switch over the relay contact, illuminate the RED (RELEASE) LED and sound the buzzer (Premium models only). This will continue as long as there continues to be a valid signal from the fire panel, once this signal stops the relay is switched back to its original position and the doors can now be held open. If class change is enabled then there will be a delay from the start of the signal from the fire panel to the doors being closed (approx 15sec). If the signal is removed before the delay ends then the doors will not close. E.g. if the bells are sounded for 5 seconds for class change then the doors will not close.

7.2.2 Manual Release

A manual release occurs when the PSU receives a valid signal from the MANUAL RELEASE terminals, the microprocessor constantly monitors these terminals for a resistance of less than 47kΩ if a resistance of less than 47kΩ is measured then the microprocessor will switch over the relay contact, illuminate the RED (RELEASE) LED and sound the buzzer (Premium models only). If the signal form the MANUAL RELEASE contact remains after the doors have been release the RED (RELEASE) LED will continue to flash and the buzzer (Premium models only) sound in sympathy will the LED until the signal is removed. Once the signal is removed the relay is switched back to its original position and the doors can now be held open.

7.2.3 Key-Switch Release (premium models only)

A key-switch release occurs when the PSU receives a valid signal from the KEY-SW terminals, the microprocessor constantly monitors these terminals for the actuation of the key-switch. Once an activation has occurred then the microprocessor will switch over the relay contact, illuminate the RED (RELEASE) LED and sound the buzzer (Premium models only). The microprocessor will also be monitoring the KEY-SW terminal for the latched state. See 4.4.1 Latching facility. Once the signal is removed the relay is switched back to its original position and the doors can now be held open

7.3 Mute A Fault.

During a fault condition the buzzer(Premium models only) will be sounding continuously, to mute the buzzer simply turn the key-switch clockwise to the RELEASE / MUTE position and back anticlockwise to the ACTIVE position, the buzzer will now be silent and will only produce a small beep every 10 seconds.

8.0 Maintenance and Regular Testing

This section details the regular and necessary testing and inspection of the Door Retainer Power Supply. Its is just as important to provide regular testing and maintenance of the system as it is to install the system correctly.

8.1 Regular System Testing.

The entire system to be tested regularly to ensure the system is always ready for use.
The testing is simple simply activate each input in turn and check that all doors connected to the PSU close. E.g. Turn the key-switch clockwise to the RELEASE position and make sure all doors have closed, turn the key-switch back to the ACTIVE position and open all doors. Trigger the MANUAL RELEASE Terminals (if fitted) and make sure all doors have closed, reset the trigger on the MANUAL RELEASE and open all the doors. Trigger the Fire Panel alarms check that all the doors connected to the PSU have closed, silence/reset the Fire Panel alarms and open all the doors.

It is recommended that the whole system be tested a minimum of at least once per month, but it is desirable to fully test or part the system on a weekly basis.

9.0 Specifications

9.1 Door Release Power Supply - Standard

Detailed Specifications			
Power Supply	Mains Input Voltage		230Vac 50Hz
	Transformer Primary Thermal Fuse		0.63A 102 DEG C. (Non Replaceable)
	Quiescent Standby Current		15mA dc
	Maximum Overall Supply Current		300 mA dc (Max.)
LED's	Front Mounted Mains - Green	Mains On	Constant
		Total Power Failure	Off
	Release - Red	Doors Released	Constant
		Doors Latched – Manual Release	Flashing 1 Hz
	Fault - Yellow	General Fault	Constant
		Fuse Blown/Missing	Flashing 1 Hz
Fuses	F1: 24V Supply Fuse - Monitored		500mA Anti Surge 20mm Glass
	F2: Internal Transformer		630mA 120 Deg (Non-Replaceable).
Housing	Front Cover		Polycarbonate - Fire Retardant.
	Back Box		Polycarbonate - Fire Retardant.
Compliance	European		CE
	Ingression Protection Rating.		IP20
Re-Ordering	PSU - Standard		VPS-24TRA300S
	PSU - Premier		VPS-24TRA300P
	KIT		VDR-KIT
	Door Retainer		VDR-S24
Warranty	Period		2 Years from Date of Manufacture
	Identification		Date of Manufacture Marked On PCB
Last Updated			18/12/03

9.2 Door Release Power Supply - Premier

Detailed Specifications				
Power Supply	Mains Input Voltage			230Vac 50Hz
	Transformer Primary Thermal Fuse			0.63A 102 DEG C. (Non Replaceable)
	Quiescent Standby Current			15mA dc
	Maximum Overall Supply Current			300 mA dc (Max.)
User Operation	Key-switch	Single Turn Clockwise	Release Doors – Doors close	
		Single Turn Clockwise	Mute Fault – short beep every 15 sec.	
		Double turn Clockwise	Latch Doors – Doors remain closed	
LED's	Front Mounted	Mains - Green	Mains On	Constant
			Mains Fail	Off
		Release - Red	Doors Released	Constant
			Door Release Latched – Manual Release	Flashing 1 Hz
			Class Change In Progress	Flashing – Increasing speed
		Fault - Yellow	General	Constant
			Fuse Missing	Flashing - 1 Hz
Internal Buzzer Premium models only	Type			Peizo, PCB Mounted
	Current			5mA max.
	Frequency			1 Khz Tone
	Sounds		Doors Released	Constant
			Fault	Constant
			Mute	Beep Every 10 Seconds
			Class Change	Beep - Increasing speed
Fuses	F1: 24V Supply Fuse - Monitored			500mA Anti Surge 20mm Glass
	F2: Internal Transformer			630mA 120 Deg (Non-Replaceable).
Housing	Front Cover			Polycarbonate - Fire Retardant.
	Back Box			Polycarbonate - Fire Retardant.
Compliance	European			CE
	Ingression Protection Rating.			IP20
Re-Ordering	PSU - Standard			VPS-24TRA300S
	PSU - Premier			VPS-24TRA300P
	KIT			VDR-KIT
	Door Retainer			VDR-S24
Warranty	Period			2 Years from Date of Manufacture
	Identification			Date of Manufacture Marked On PCB
Last Updated				18/12/03

9.3 Door Release Power Supply KIT

Detailed Specifications

Power Supply	Mains Input Voltage			230Vac 50Hz
	Transformer Primary Thermal Fuse			0.63A 102 DEG C. (Non Replaceable)
	Quiescent Standby Current			15mA dc
	Maximum Overall Supply Current			300 mA dc (Max.)
Door Retainer	Holding Force			20daN
	Voltage			24
	Nominal Power			0.6Watt
	Release Button			Yes
PSU LED's	Front Mounted	Mains - Green	Mains On	Constant
			Mains Fail	Off
		Release - Red	Doors Released	Constant
			Door Release Latched – Manual Release	Flashing 1 Hz
PSU Internal Buzzer Premium models only	Type			Peizo, PCB Mounted
	Current			5mA max.
	Frequency			1 Khz Tone
	Sounds		Doors Released	Constant
			Fault	Constant
			Mute	Beep Every 10 Seconds
			Class Change	Beep - Increasing speed
PSU Fuses	F1: 24V Supply Fuse			500mA Anti Surge 20mm Glass
	F2: Internal Transformer			630mA 120 Deg (Non-Replaceable).
Housing	PSU		Front Cover	Polycarbonate - Fire Retardant.
			Back Box	
	Door Retainer		Box	Grey Ral 9002 Painted Steel
Compliance	PSU		European	CE
			Ingression Protection Rating.	IP20
	Door Retainer		Conformity	EN1155, BS5839
			Ingression Protection Rating	IP52
Re-Ordering	PSU - Standard			VPS-24TRA300S
	PSU - Premier			VPS-24TRA300P
	KIT			VDR-KIT
	Door Retainer			VDR-S24
Warranty	Period			2 Years from of Manufacture
	Identification			Date of Manufacture Marked On PCB
Last Updated				18/12/03

Notes:

Technical Help

If you have any difficulties with this product please call our technical help line.

Tel. 01928581098
Fax. 01928581099

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